2022nov28

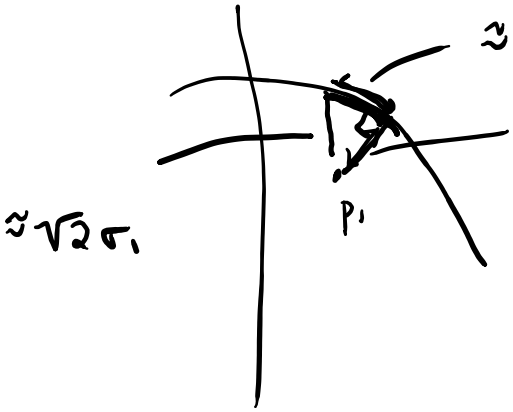
Monday, November 28, 2022 13:16

$$\frac{1}{(1-p_1 z^{-1})(1-p_1^* z^{-1})} = \frac{C_1}{1-p_1 z^{-1}} + \frac{C_1^*}{1-p_1^* z^{-1}} \quad (1-p_1 z^{-1})$$

$$\frac{1}{1-p_1^* z^{-1}} = C_1 + C_1^* \frac{1-p_1 z^{-1}}{1-p_1^* z^{-1}} \to 0 \qquad \Big|_{z=p_1}$$

$$\frac{1}{1-p_1^*/p_1} = C_1 = -\frac{p_1}{p_1 - p_1^*} = \frac{p_1}{j2\,\mathrm{Im}(p_1)}$$

$$p_1 = \mathrm{Re}(p_1) + j\,\mathrm{Im}(p_1)$$
$$p_1^* = \mathrm{Re}(p_1) - j\,\mathrm{Im}(p_1)$$



$$1 - e^{-\sigma_1} \approx \sigma_1$$

$$|H(\omega_1 \pm \sigma_1)| \approx \frac{1}{\sqrt{2}\sigma_1} \approx \frac{|H(\omega_1)|}{\sqrt{2}}$$